Technical Session 4: Intermodal Freight Network Systems

CCDoTT - APS Overview
Philadelphia Regional APS Assessment
EMT DEMONSTRATION
PNW Regional APS Assessment

TRANSYSTEMS CORPORATION

APS Purpose

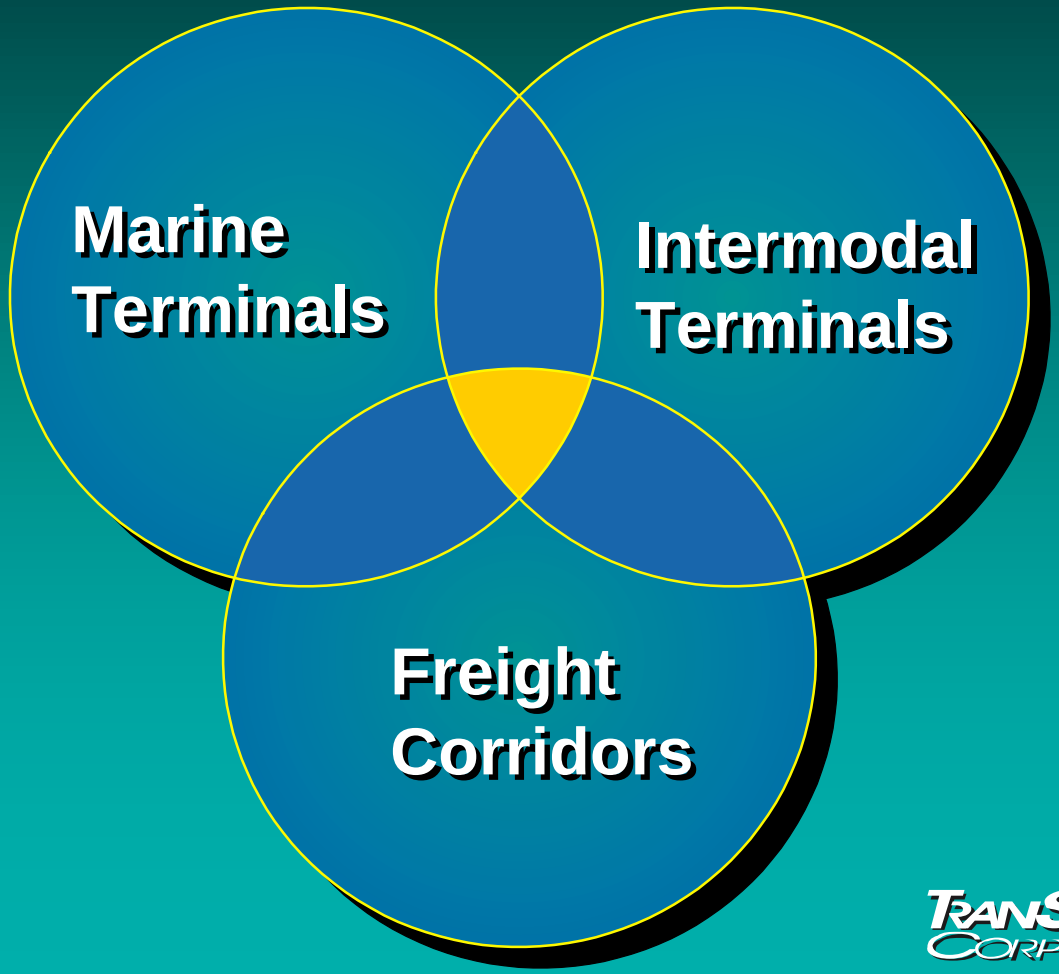
Agile Port Systems are being developed to address inefficiencies and congestion at marine terminals, inland intermodal facilities and distribution corridors for the benefit of United States **Commercial & Military** freight transport.

Potential Benefits

- The Agility to Accommodate Commercial and Military Freight
- Flexibility to Utilize a Variety of Terminals and Intermodal Infrastructure
- Increased Marine Terminal Efficiency
- Increased Intermodal Terminal Efficiency
- Increased Freight Transport Efficiency

CCDoTT - MARAD - USTRANSCOM

Increased Agility and Flexibility through a Systems Approach



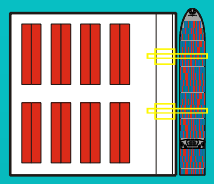
TranSystems Corporation

Agile Port Systems (APS)

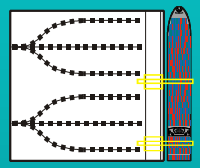
Agile Port Systems consist of five major components:

- Marine Terminals
  - Conventional
  - High Speed Sealift (HSS)
- Intermodal Terminals
- Freight Corridors
- Data/Information Management
- System Management

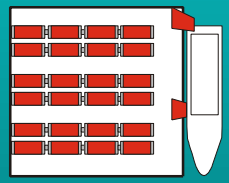
Possible APS Terminals



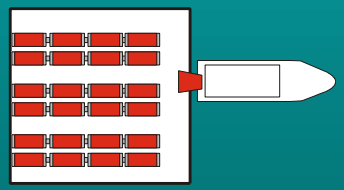
Conventional Marine Terminal



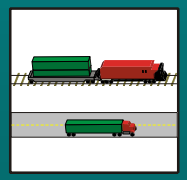
Agile Marine Terminal (AMT)



Ro-Ro/High Speed Sealift Terminal



High Speed Sealift Terminal

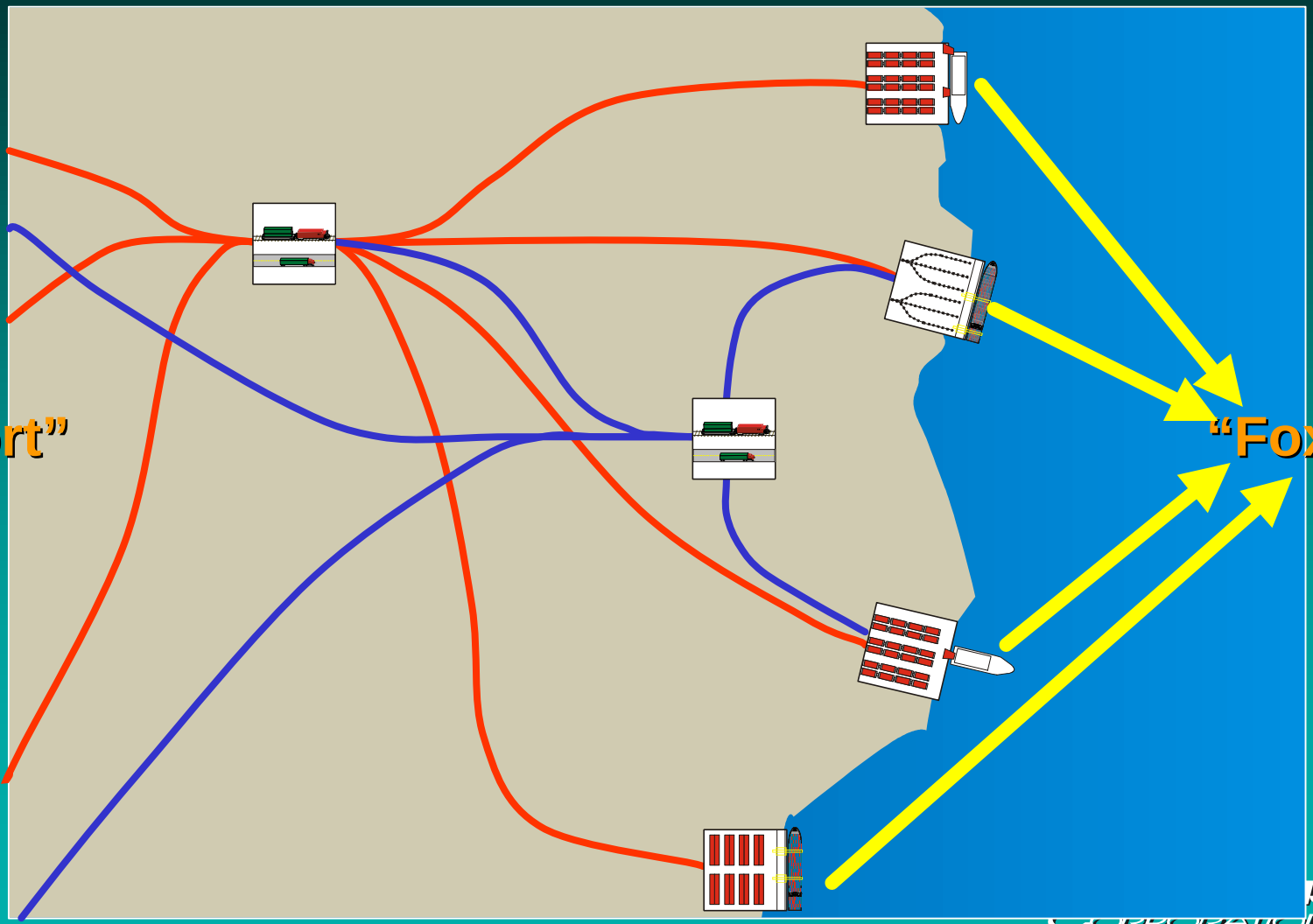


Intermodal Interface Center (IIC)

CCDoTT - MARAD - USTRANSCOM

AGILE PORT SYSTEM (APS) CONCEPT

DOD Surge & Sustainment Operations - "From Fort to Foxhole"



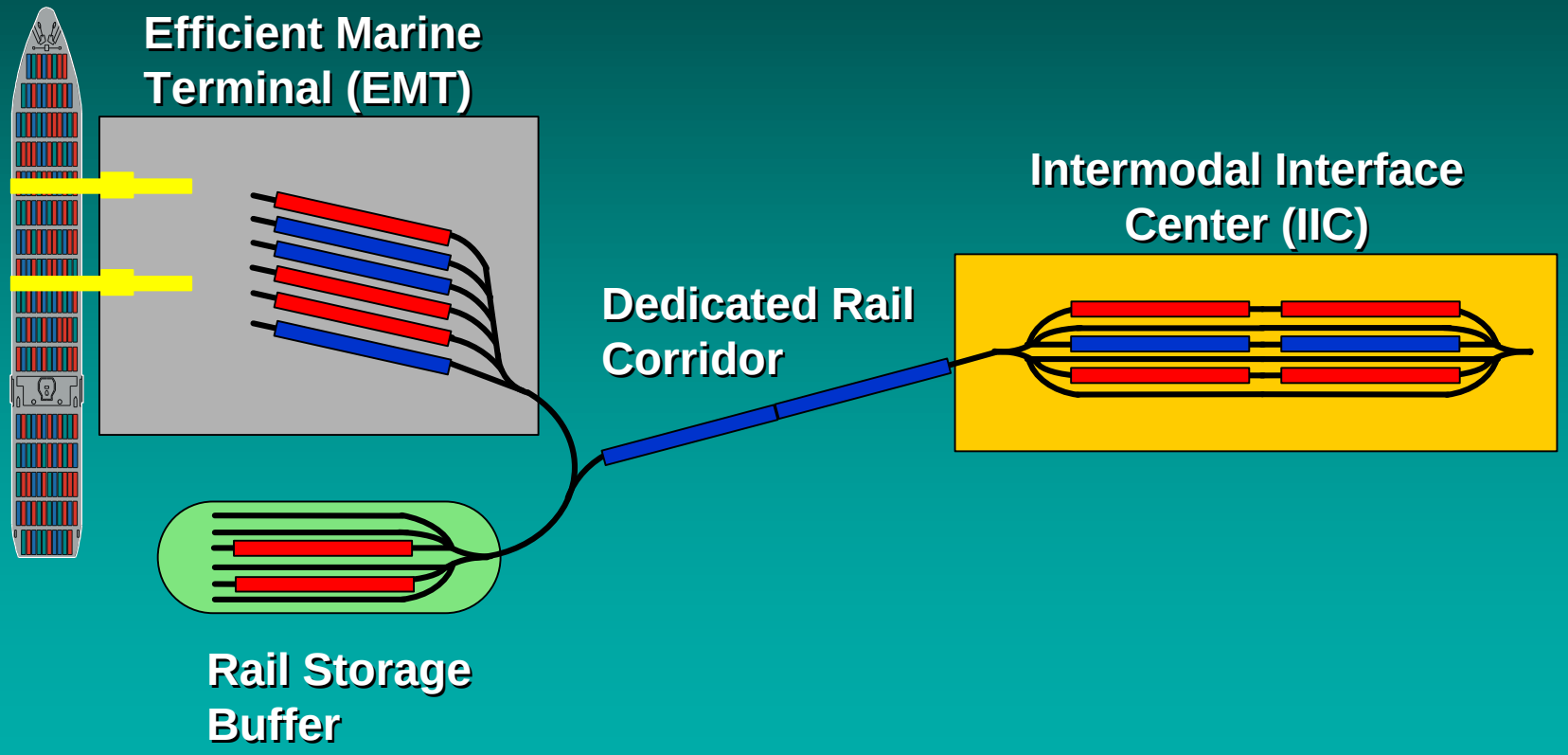
Current APS Projects

- Efficient Marine/Rail Intermodal Interface (EMRII)
  - EMT Demonstration
  - PNW Regional Assessment
- Philadelphia Region Agile Port System Study
  - US Maritime Administration
  - Delaware River Port Authority (DRPA)

Efficient Marine/Rail Intermodal Interface (EMRII)

CCDoTT - MARAD - USTRANSCOM

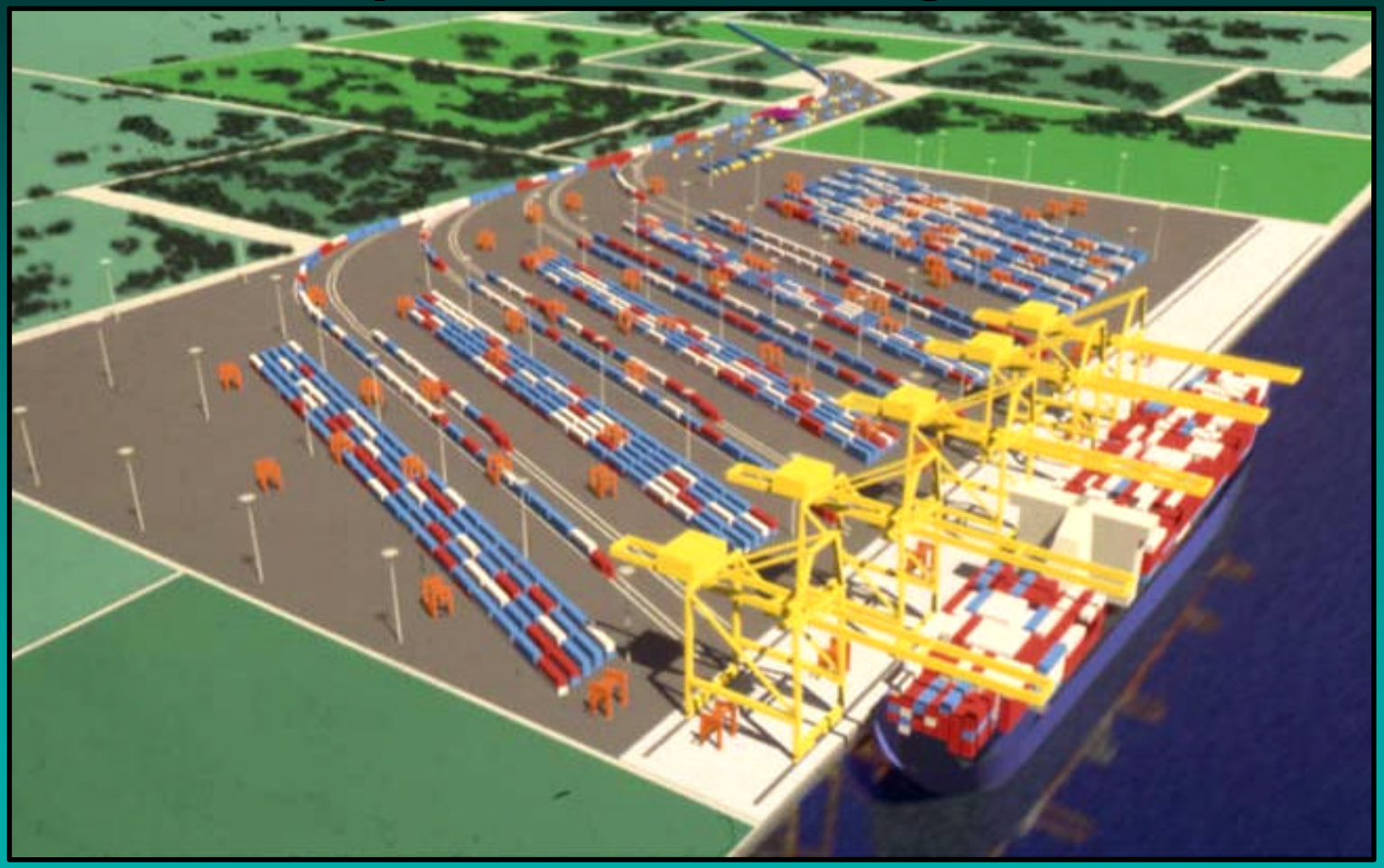
EMRII System



TranSystems Corporation

CCDoTT - MARAD - USTRANSCOM

Conceptual Rendering of EMT



TRANSYSTEMS CORPORATION

Conceptual Rendering of IIC

Dedicated Freight Corridor (DFC)

- Double-stack capable
- Double track with bypass sidings
- Minimum at-grade interaction with road traffic
- Inland terminus close to mainline rail routes and interstate highway system

Data/Information Management System

- Requires Advance Consists (ship/train inventory and stowage)
- Will Perform:
  - Planning and Designation of Shuttle Train Blocks
  - Equipment Routing / Real-Time Integrated Logistics (ITS)
  - Corridor Traffic Management

System Manager

- Responsible for managing all components of the EMRII System
- Will Perform:
  - Planning and coordination between all System Components (EMT, IIC, DFC and Data/Information Management)

APS Attention

- Port of Seattle
- Port of Tacoma
- Port of Portland
- Port of Oakland
- Delaware River Port Authority

CCDoTT - MARAD - USTRANSCOM

Philadelphia Region Agile Port System Study

TranSystems Corporation

CCDoTT - MARAD - USTRANSCOM

Project Perspective

"How might an Agile Port System (APS) support economic development, facilitate the development of emerging High Speed Sealift (HSS) concepts, and enhance Department of Defense (DoD) power-projection and sustainment capability in the Philadelphia Region?"

TranSystems Corporation

Task Structure

- Task 1: System Requirements
- Task 2: Evaluation of Existing & Currently Planned Facilities
- Task 3: Analysis of Alternative Scenarios
- Task 4: Capacity Gap Assessment
- Task 5: Identification of Next Steps

CCDoTT - MARAD - USTRANSCOM

Project Participants

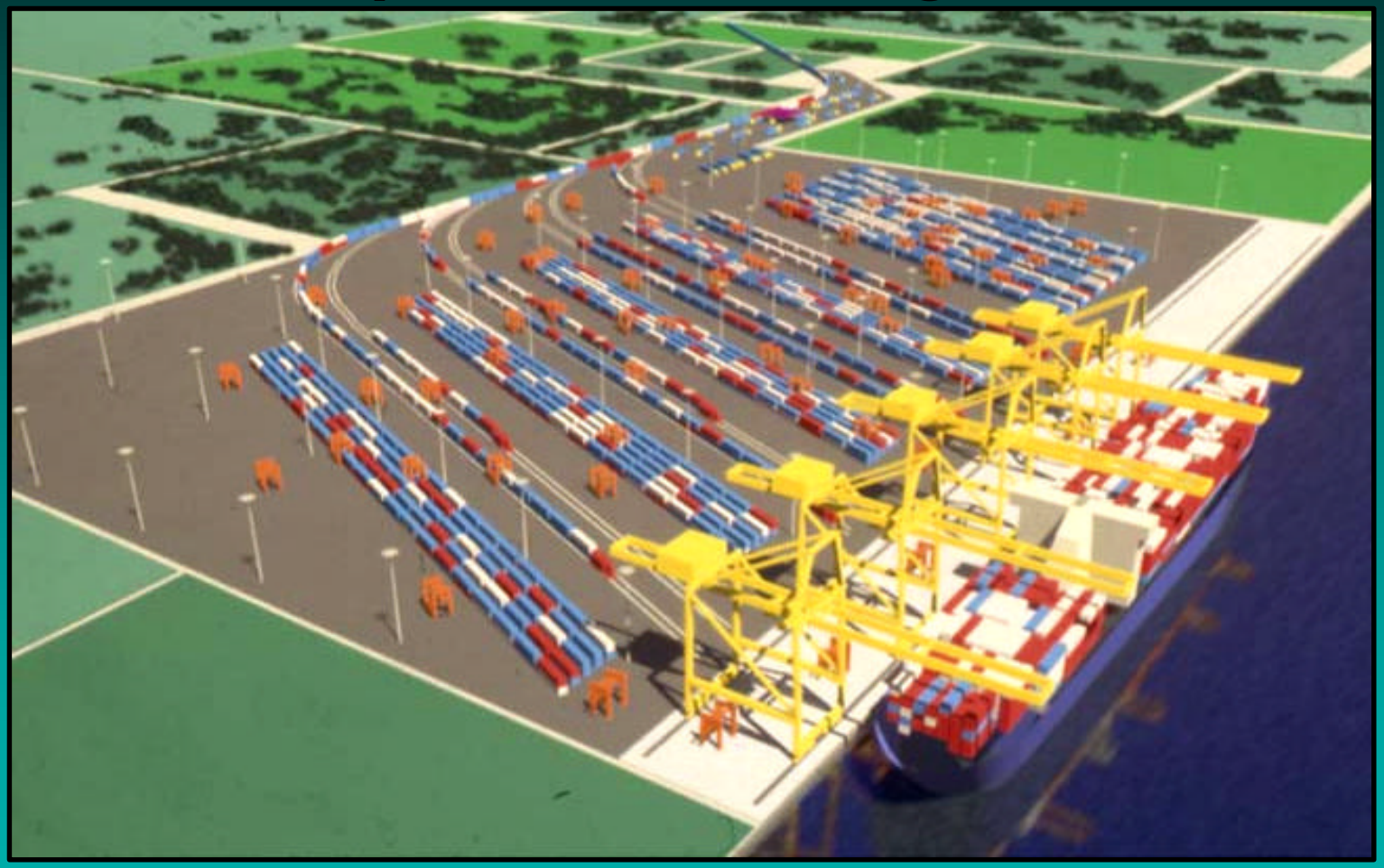
- Philadelphia Marine Terminals (DRPA)
- Railroads
- Military
  - US Transportation Command (USTRANSCOM)
  - Defense Logistics Agency (DLA)
  - Department of the Army, Office of the Chief of Staff for Logistics
  - US Forces Command (FORSCOM)
  - Army Science Board
  - Pennsylvania National Guard
- Pennsylvania DOT

TranSystems Corporation

EMT Demonstration Requirements

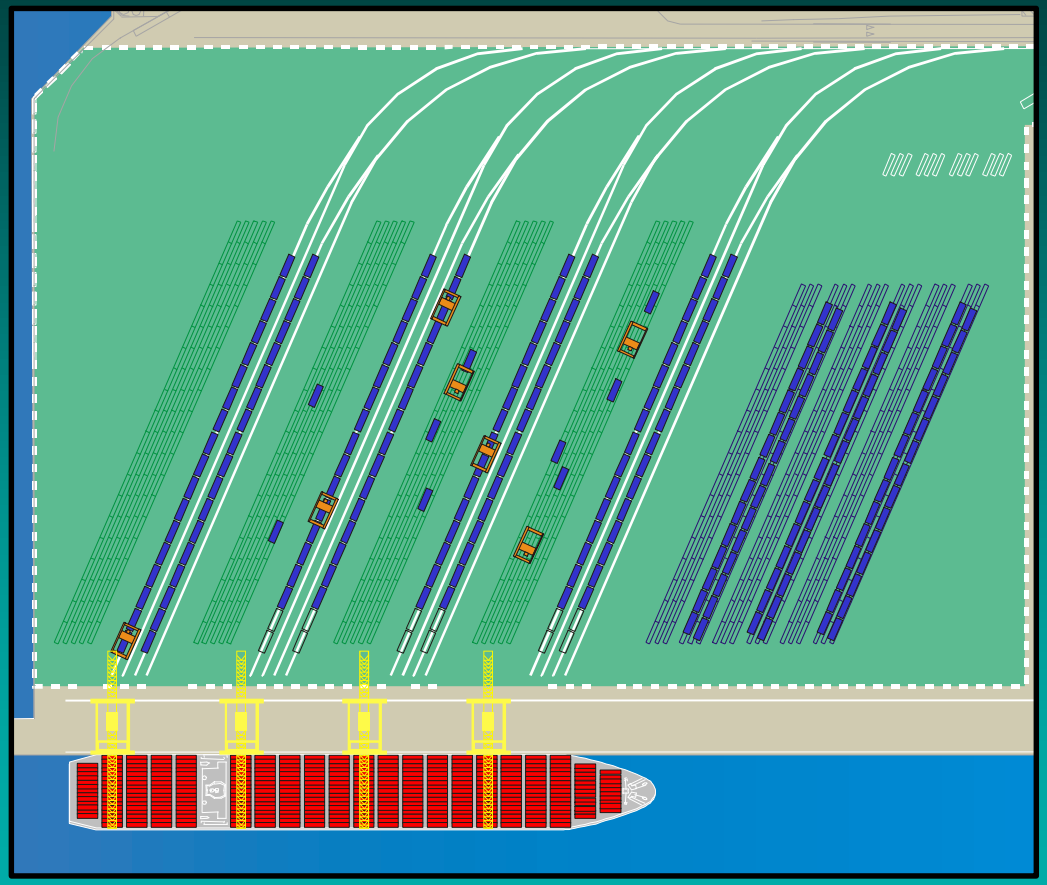
CCDoTT - MARAD - USTRANSCOM

Conceptual Rendering of EMT



TRANSYSTEMS CORPORATION

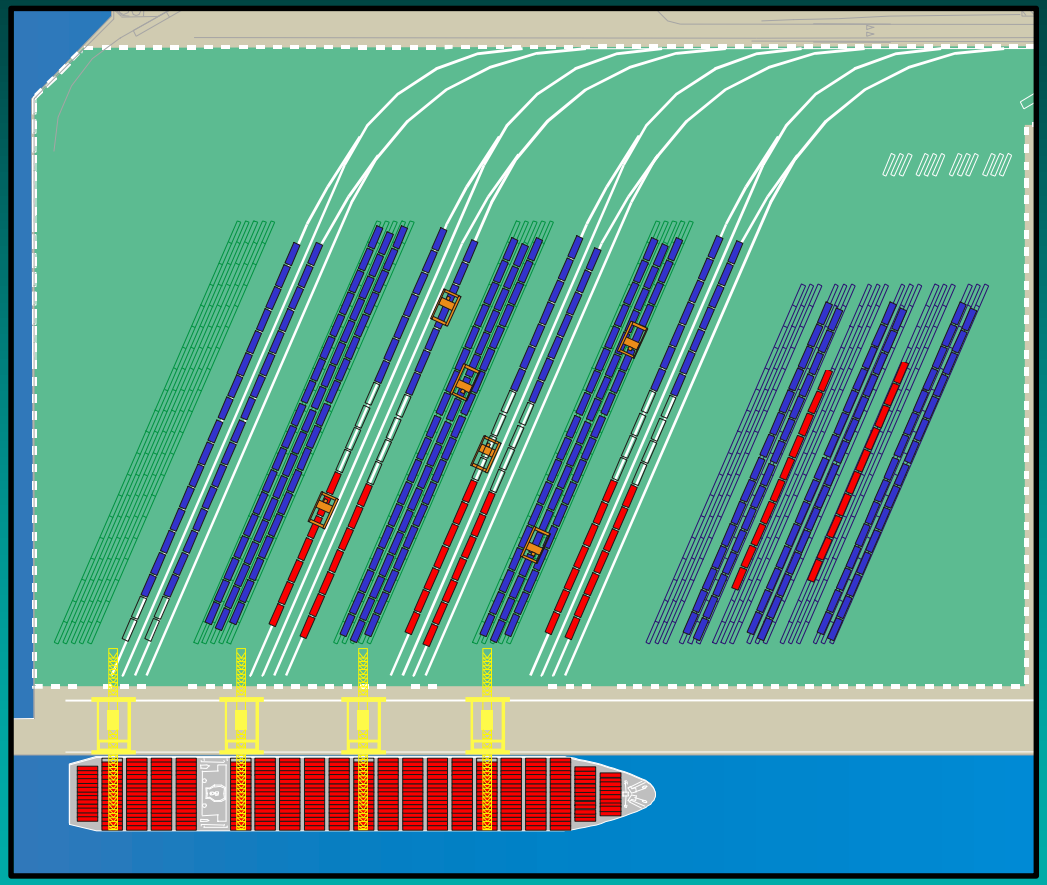
EMT Operations - Phase 1



- **Terminal is empty and idle.**
- **Shuttle trains arrive with export loads.**
- **Straddle carriers move to unload initial rail containers to ITZ, creating empty railcars ready to receive imports.**

TRANSYSTEMS CORPORATION

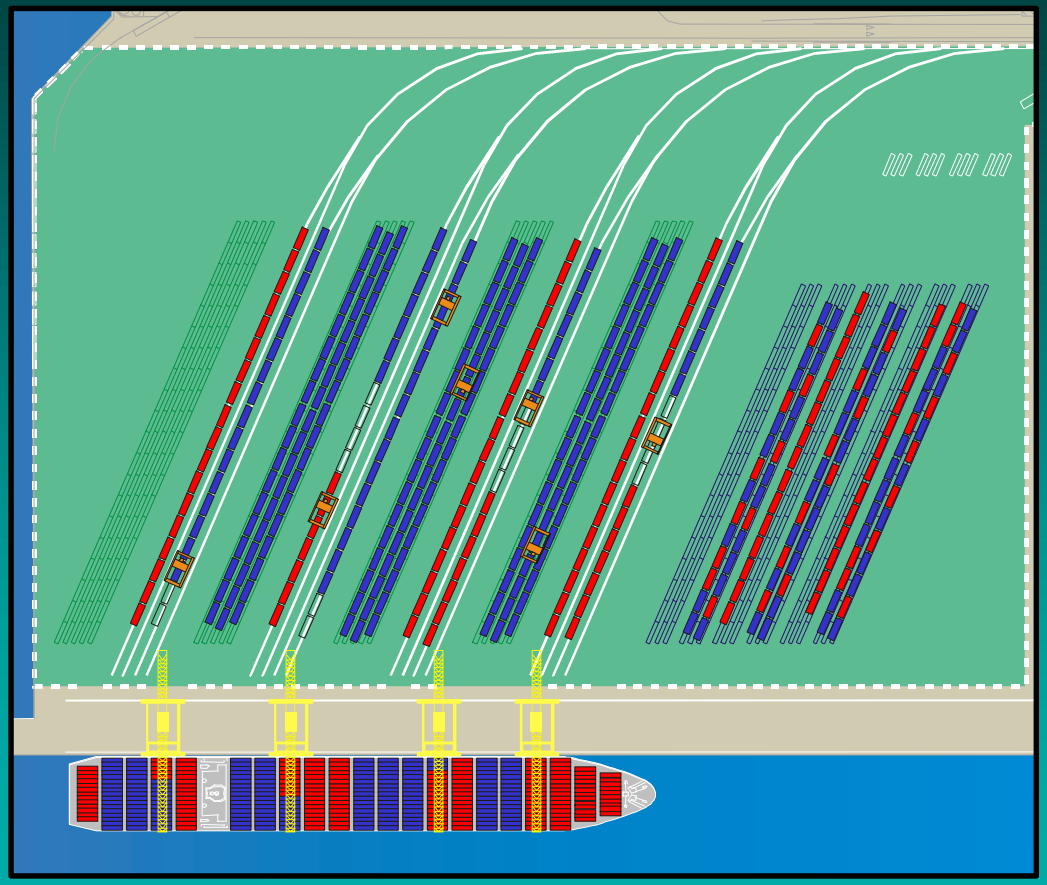
EMT Operations - Phase 2



- **Vessel discharge begins.**
- Straddle carriers pick up import container from wharf and load directly to railcar. Take export container from railcar and deposit into the ITZ.
- This continues until hatch covers are removed and first cell is discharged.

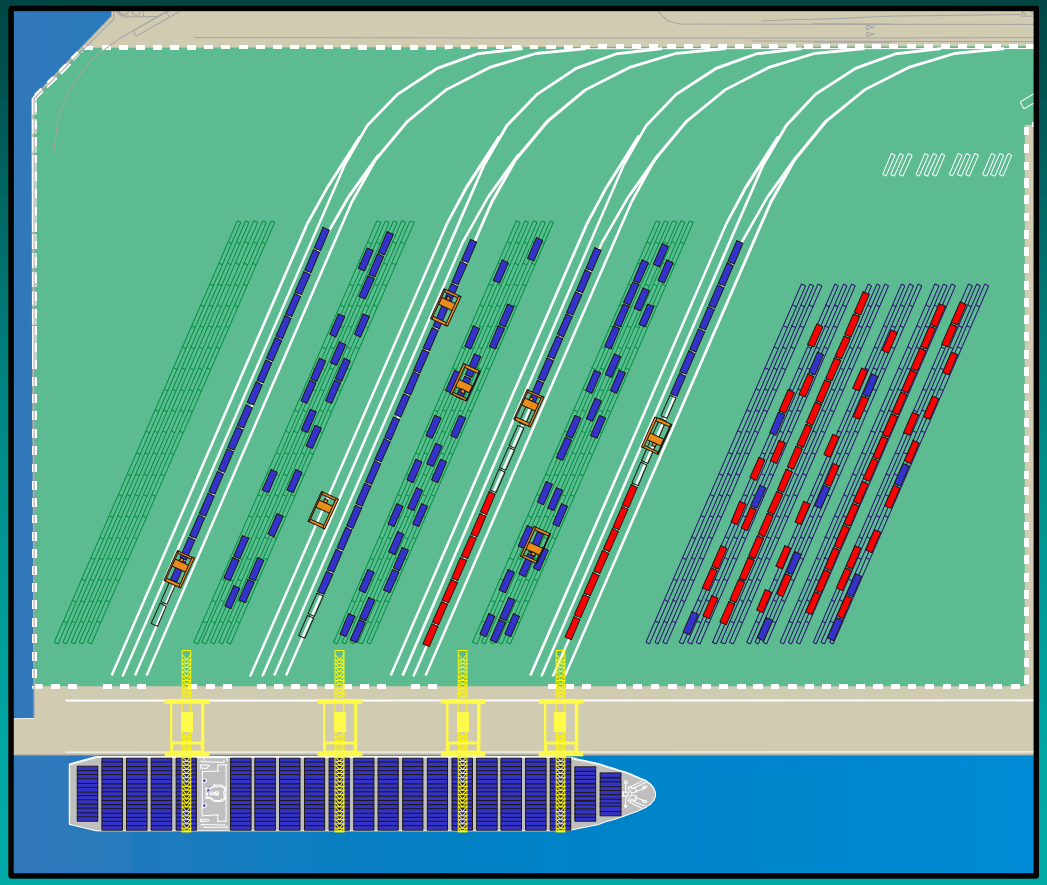
TranSystems Corporation

EMT Operations - Phase 3



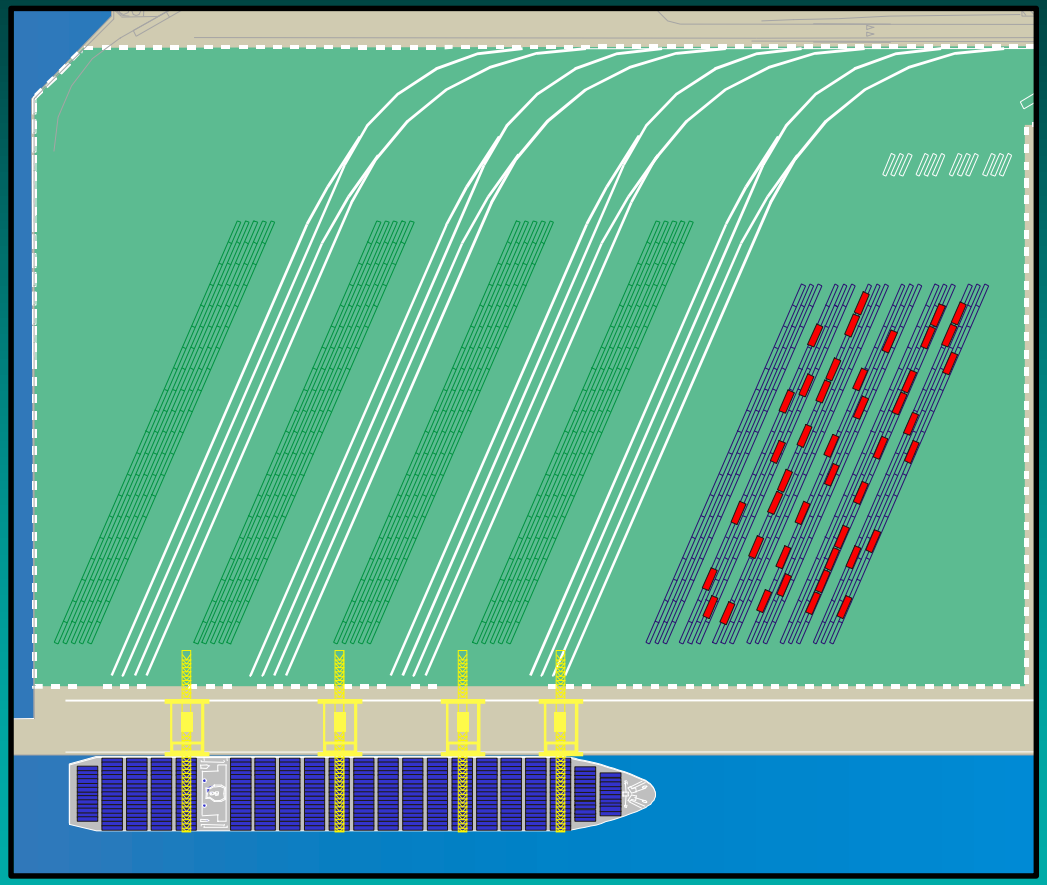
- **Simultaneous load and discharge begins.**
- **Straddle carriers pick up import container from wharf and load directly to railcar, take export container from railcar and proceed to wharf.**
- **This continues until all import containers are discharged.**

EMT Operations - Phase 4



- **All import containers are discharged.**
- **Straddle carriers pick up an export container from either rail or ITZ and take to the wharf.**
- **This continues until all export containers are loaded.**

EMT Operations - Phase 5



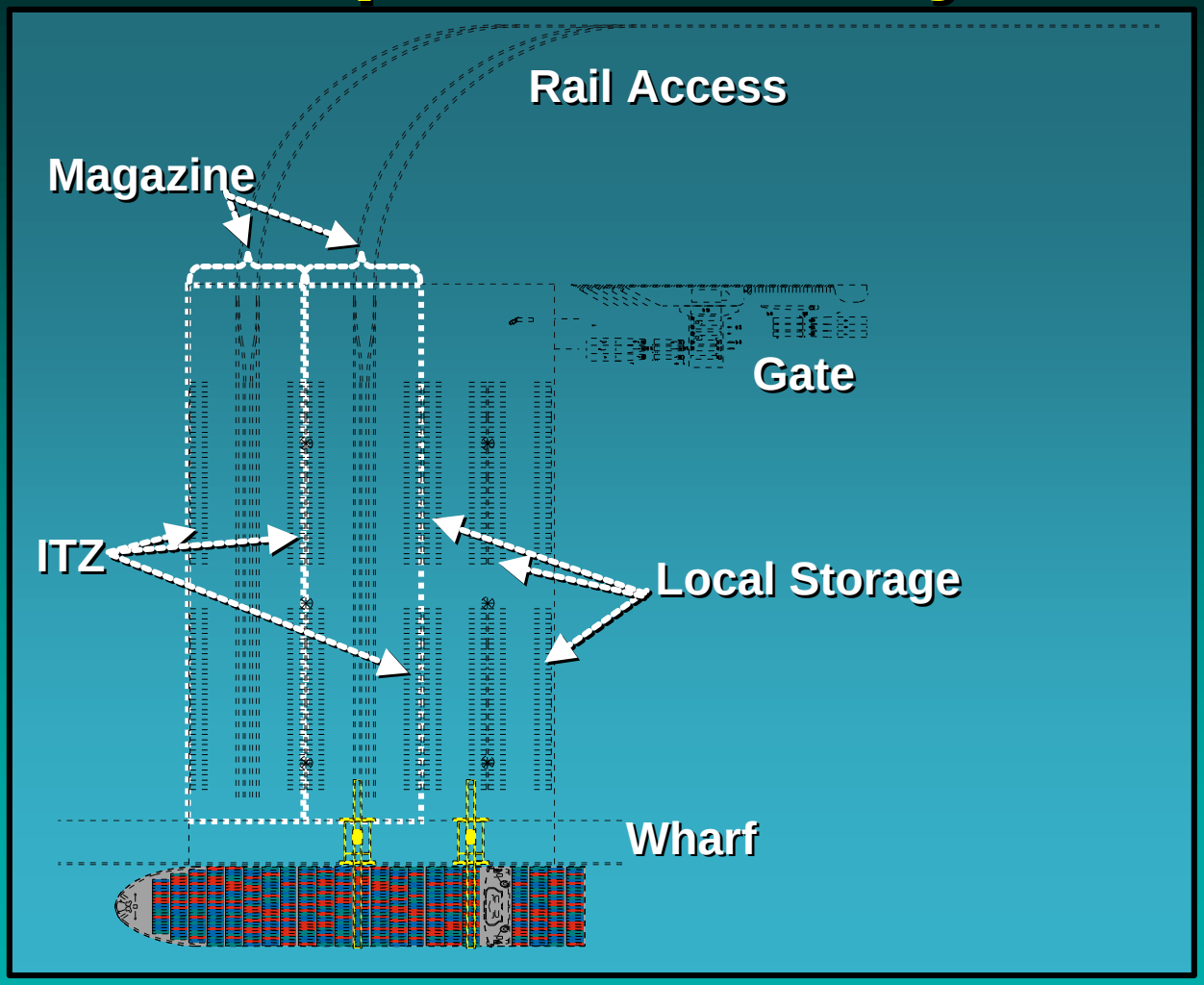
- Final containers are loaded onto ship.
- Ship departs.
- Terminal left empty and idle, ready for next vessel call.

Physical Demonstration Requirements

- Vessel
- Terminal (2-magazines)
- Rail Cars (related to vessel size)
- Switch Engine - 1
- Container Cranes - 2
- Yard Equipment (terminal specific)
- Labor

CCDoTT - MARAD - USTRANSCOM

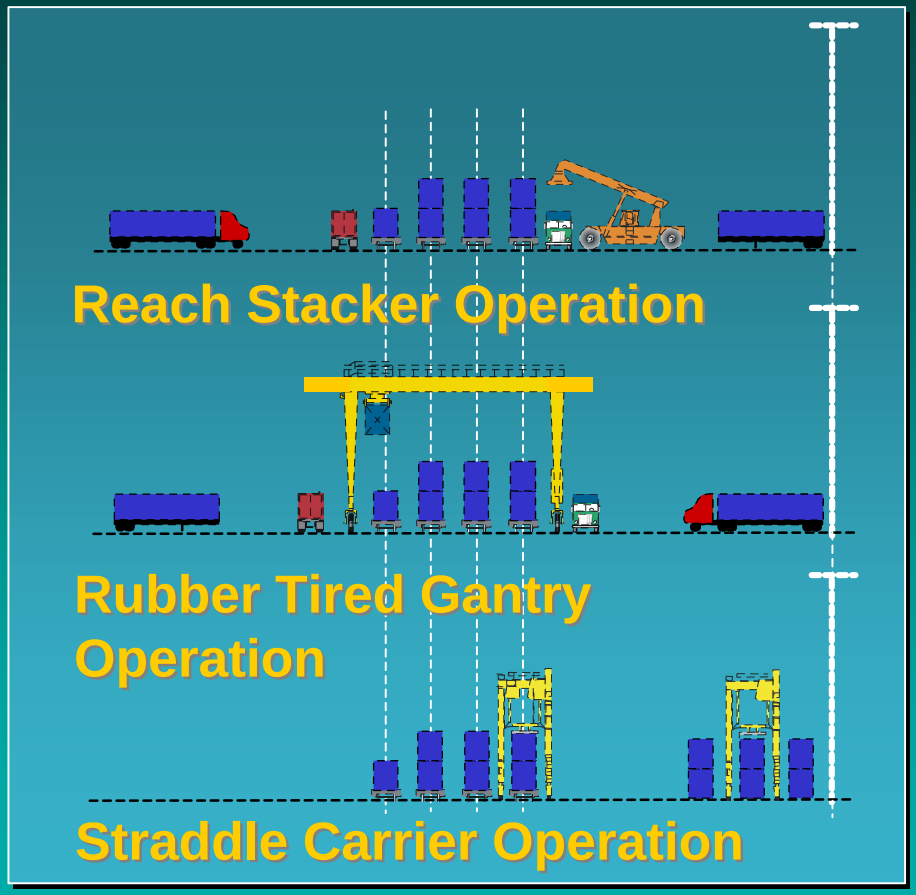
Conceptual EMT Layout



TRANSYSTEMS CORPORATION

CCDoTT - MARAD - USTRANSCOM

Agile Marine Terminal Module

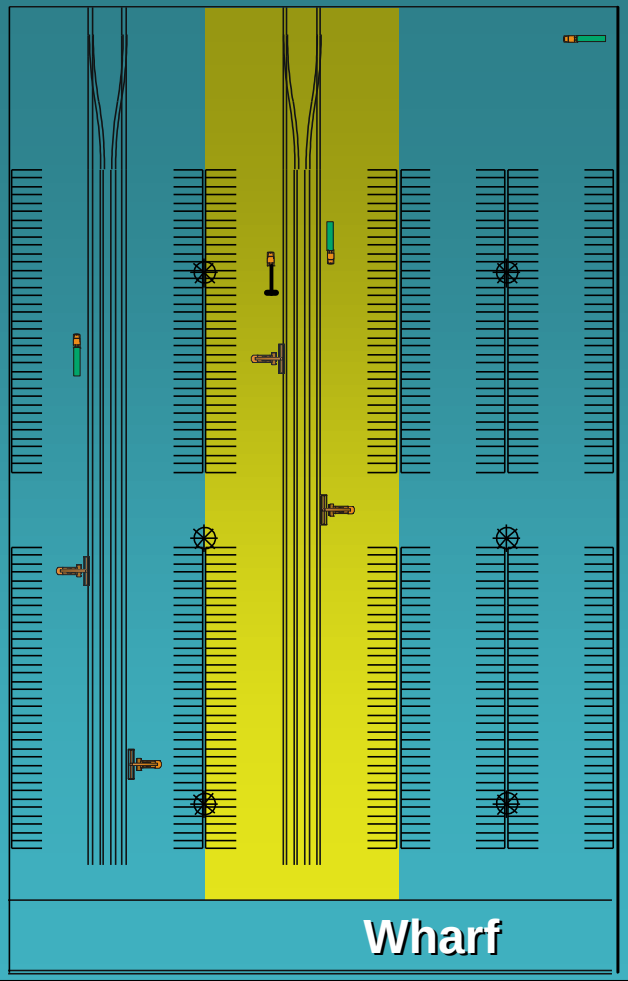


Multiple Grid Overlay System

TranSystems Corporation

CCDoTT - MARAD - USTRANSCOM

Reach Stacker Wheeled Mode

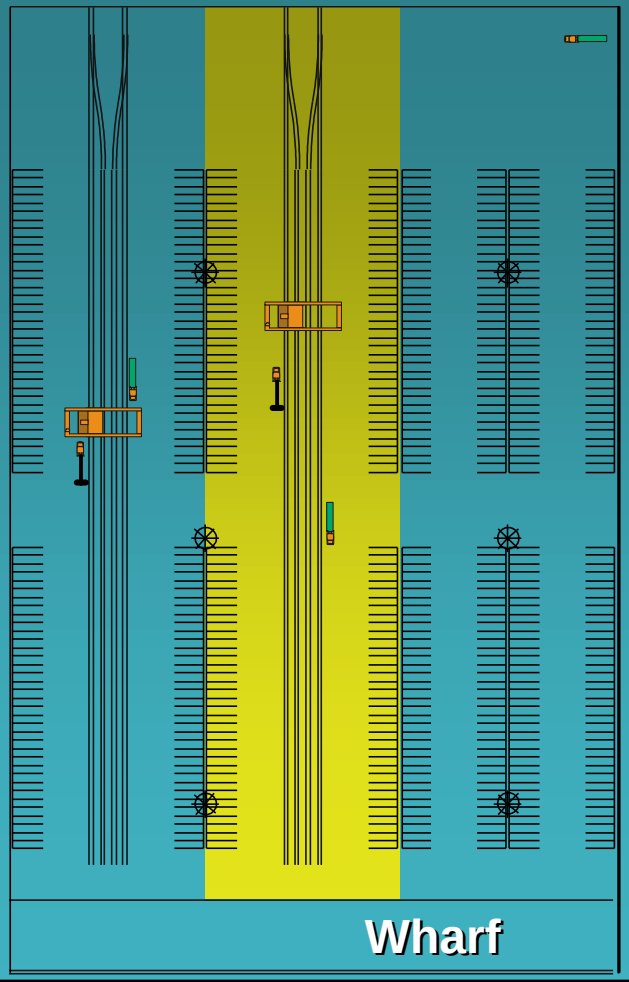


- 8.0 Ac. Magazine
- Total Module = 25.0 Ac.
- ITZ = 144 FEU
- Storage = 288 FEU

TRANSYSTEMS CORPORATION

CCDoTT - MARAD - USTRANSCOM

RTG Wheeled Mode

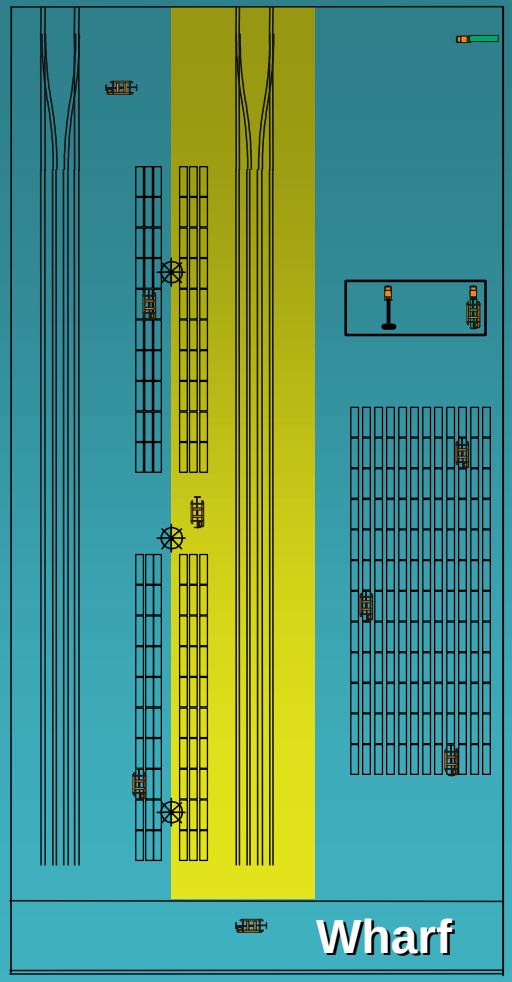


- 8.0 Ac. Magazine
- Total Module = 25.0 Ac.
- ITZ = 144 FEU
- Storage = 288 FEU

TRANSYSTEMS CORPORATION

CCDoTT - MARAD - USTRANSCOM

Straddle Carrier Mode

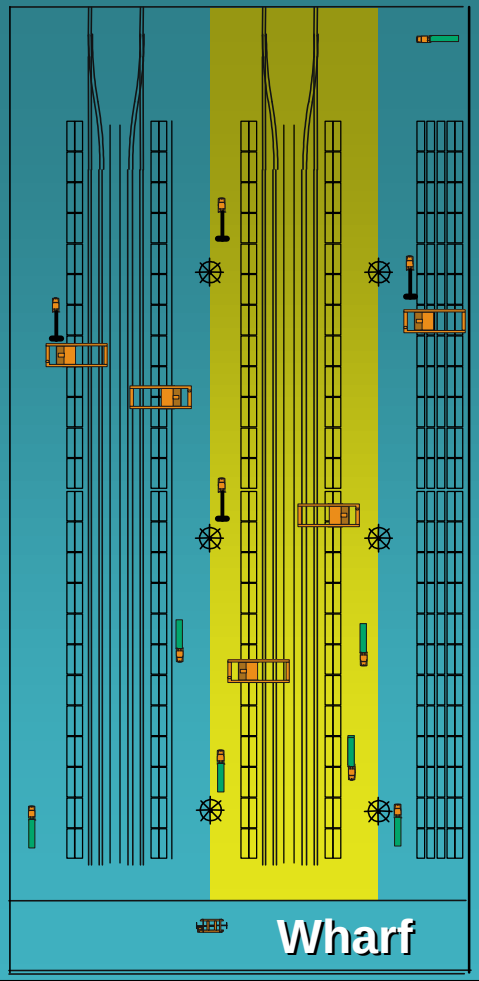


- 5.5 Ac. Magazine
- Total Module = 17.5 Ac.
- ITZ = 120 FEU
- Storage = 288 FEU

TRANSYSTEMS CORPORATION

CCDoTT - MARAD - USTRANSCOM

RTG Grounded Mode



- 5.5 Ac. Magazines
- Total Module = 14 Ac.
- ITZ = 192 FEU
- Storage = 240 FEU

TRANSYSTEMS CORPORATION

Performance Measures

- Conventional Operations
- APS Operations
- Data Collection
  - Vessel Operations
  - Magazine Operations
  - Cargo Transfer Operations
  - Local Storage Area Operations
  - Gate Operations

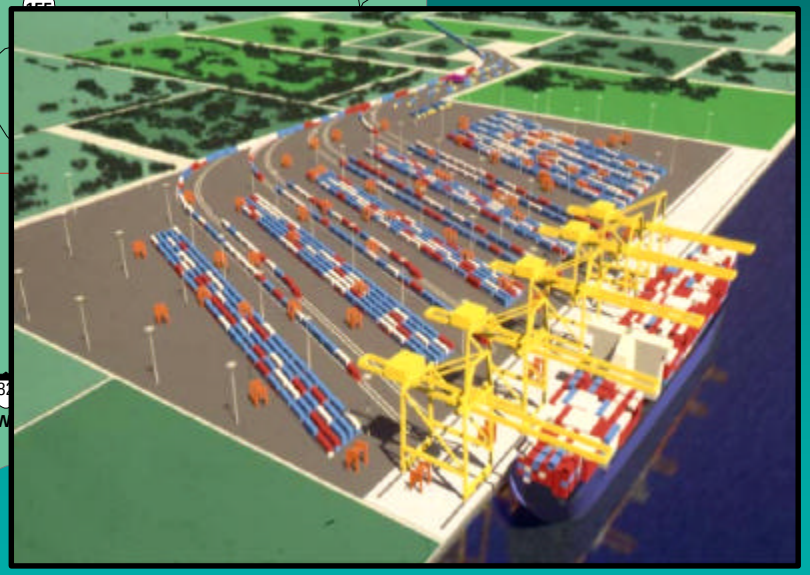
Demonstration Team

- Port Authority
- Terminal Operator
- Ocean Carrier
- Railroad
- Labor
- Shipper

CCDoTT - MARAD - USTRANSCOM

Pacific Northwest Regional Demonstration - Requirements

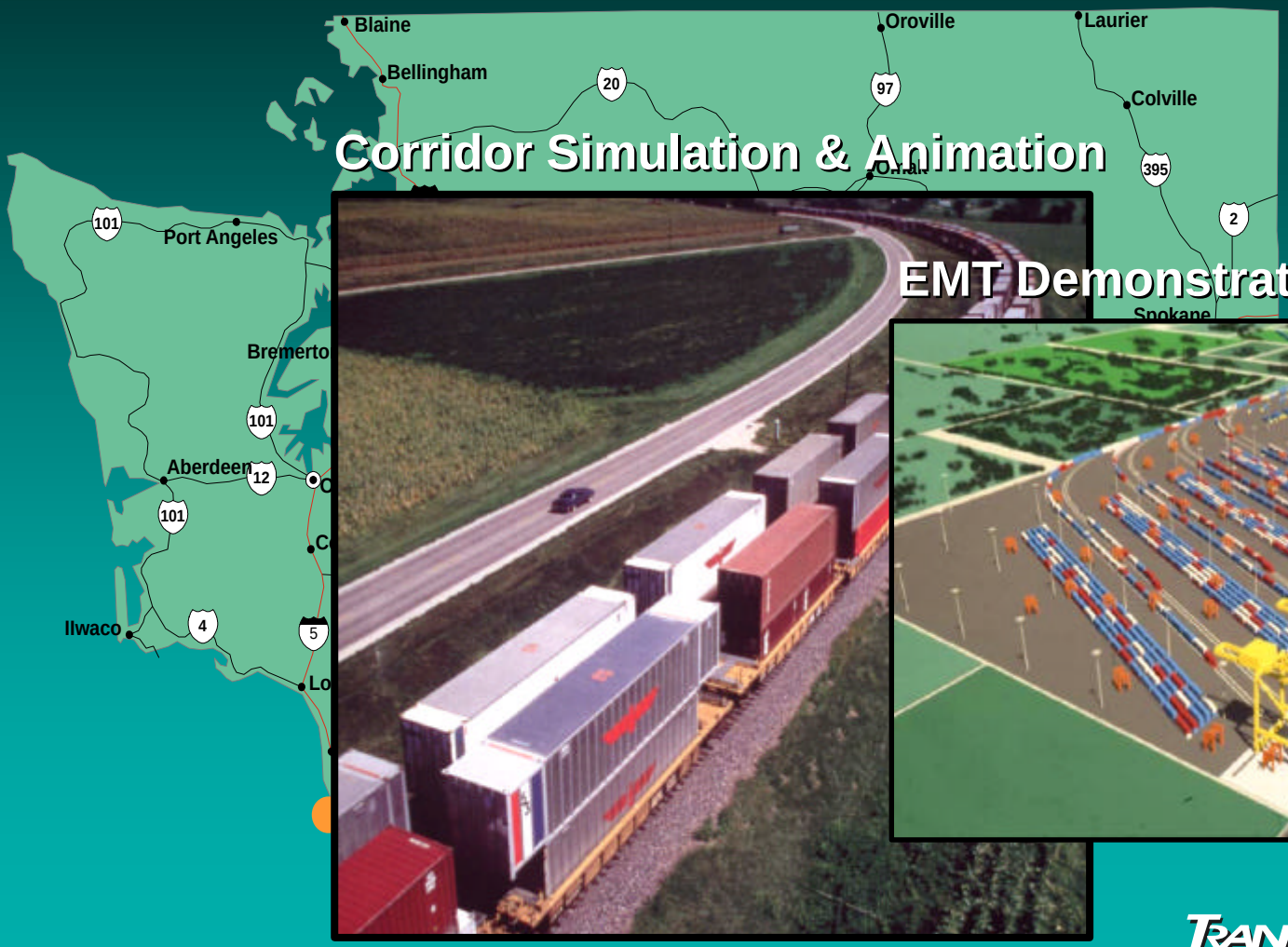
EMT Demonstration Plan



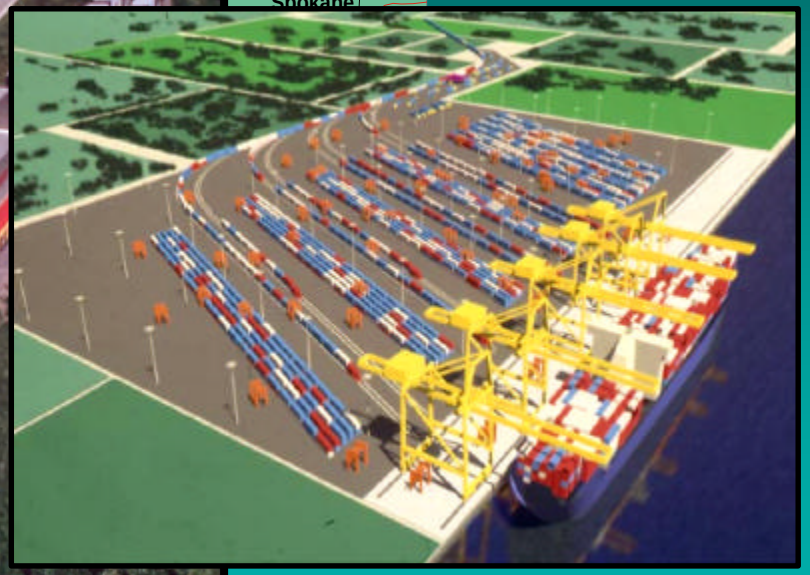
TRANSYSTEMS CORPORATION

CCDoTT - MARAD - USTRANSCOM

Pacific Northwest Regional Assessment - Demonstration



EMT Demonstration



TRANSYSTEMS CORPORATION